

In west longitudes, during the last decade, the Aleutian cyclone also was productive of strong wintry gales, the greatest violence of which occurred on the same days as to the westward of the 180th meridian.

On the 19th and 20th the American S. S. *Carriso*, Manila toward San Francisco, near 43° 40' N., 146° 30' W., encountered whole westerly gales, lowest pressure 28.69, late on the 19th. On the 20th the British S. S. *Tyndareus*, in 50° 06' N., 141° 46' W., experienced its lowest pressure, 28.71 inches, in the same storm. Quoting from the observer:

3 a. m., wind veered to ESE. 7. 4 a. m. SE. 8, lowest barometer. 5 a. m., veered to SSE. 8. 6 a. m., veered to S. 8. 8 a. m., wind increased to force 10. Noon, wind veered to SSW. 8. 8 p. m., wind and sea decreasing.

On the 24th and 25th, the storm center was very near Dutch Harbor, but the cyclone was of great dimensions. The Canadian S. S. *Canadian Scottish*, in 53° 57' N., 139° 44' W., experienced the highest wind force, 11 from the

southwest. The American S. S. *President Jackson*, in 50° 55' N., 156° 30' W., encountered a south to southwest gale, force 11, lowest pressure 28.12 inches.

On the last two days of the month, with the cyclone central over the northern Gulf of Alaska, the American S. S. *Eldridge* experienced whole gales to storm winds from westerly directions, the lowest pressure noted being 28.68, in 49° 42' N., 153° 20' W., on the 28th.

Fog occurred along the northern and middle steamship routes on several days, but was not so frequent as during January, except along the American coast between 25° and 50° N. Here it was particularly frequent between 30° and 40° N., where it was observed on 30 or more per cent of the days.

From the standpoint of the seaman the rough weather of February resulted principally in delays between ports, many vessels being compelled to slow engines for hours at a time in the face of enormous or greatly confused seas.

551.516 (73) DETAILS OF THE WEATHER IN THE UNITED STATES GENERAL CONDITIONS

By ALFRED J. HENRY

A dry month everywhere, except locally in the State of Washington, in the Missouri Valley, the Gulf States and the Lake region. Dry weather continued in Oregon and California.

Temperature was above the normal in the Northwest and below in the Southeast, the dividing line between the two areas running northeast-southwest from west Texas to the Lake region. The usual details follow.

CYCLONES AND ANTICYCLONES

By W. P. DAY

Low-pressure areas were about normal in number, but included a large proportion of secondary developments over the South and Southwest. There were an unusual number of large and sluggish high-pressure areas. These highs occupied the northern interior districts for days at a time and probably prevented the normal eastward drift of the lows and favored the development of secondaries over southern districts. These southern lows were also affected and showed numerous abnormal movements. In other words, there was a more or less continuous outflow of cold air from the northern interior with somewhat abortive attempts on the part of the warm air to pierce this front, at least over the continental areas.

FREE-AIR SUMMARY

By L. T. SAMUELS, Meteorologist

There are shown in Table 1, the monthly mean temperatures, relative humidities and vapor pressures together with the departures from normal and in Table 2, the resultant wind directions and velocities and the normals. The large positive temperature departures at all levels at Ellendale are conspicuous while practically the opposite condition is found at Due West. The very excellent agreement between the temperature departures found for the various kite stations and those shown in Climatological Chart III is of particular interest in that it indicates the close approximation to the true average monthly temperatures as determined from the daily

maxima and minima of surface observations and those found at the average time of kite flights.

The resultant wind directions at Drexel and Ellendale showed the largest deviation from the normals, there being a very pronounced north component in the monthly means. This, it may appear, is somewhat in conflict with the fact that these two stations showed the largest positive temperature departures, but it will be observed that the resultant velocities for the month at these stations were considerably less than normal. It is further probable that in a number of cases the northerly winds at these stations were not necessarily relatively cold winds but as was indicated in the free-air summary for January, 1924, may have followed a curved path and originated over a relatively warm region.

As a rule a well-developed low is accompanied, not only by considerable cloudiness, but at least in certain quadrants by more or less widespread precipitation as well, thereby making it impracticable to secure within its confines good kite or pilot-balloon observations. On the morning of the 3d, however, there appeared a deep low central over the lower Missouri Valley which in the second respect differed from the average. For this reason it seems advisable to relate in some detail the characteristics of the upper atmosphere as shown by aerological observations during the eastward advance of this storm. Its movement across the country was conspicuously slow, the center being over the lower Lakes three days later. The precipitation area increased rapidly, however, after the 3d, but fortunately good kite observations were obtained during the most of this period, some of these being made during snow flurries. The times of these observations were approximately the same as indicated by the morning weather charts so that reference to the latter is suggested in order to locate the position of any particular station relative to the storm center.

Attention is first invited to the "flat map" of the 2d with respect to both pressure and temperature gradients (not reproduced). The free-air temperatures on this day exhibited the same characteristics, there being practically no temperature difference between Drexel and Groesbeck from 1,000 to 4,000 m. It seems probable that this fact played a part in the rapid development of the low as found the next morning. On the next day (3d) all of the kite stations except Due West were within the boundaries of this storm and fortunately all stations